

REMARKS

Claims 1-3, 5-6 and 17-19 are pending. Claims 7 and 8 have been cancelled herein. Claims 1 and 6 have been amended herein. Claims 17-19 have been added herein. Support for the amendments and new claims is set forth below.

Applicants' Response to Claim Rejections Under 35 U.S.C. §103

Claims 1-3 and 5-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over **Maeno *et al.*** (U.S.P. 6,753,611) in view of any of **Wu** (U.S.P. 6,017,815), **Watanabe *et al.*** (U.S.P. 6,787,907), or the admitted prior art (APA). In response thereto, applicants have amended claims 1 and 6 herein to more distinctly claim the subject matter of the invention. The amendment encompasses the disclosure set forth in FIGs. 8 and 9 and pages 17-21 of the current application, wherein the interconnection 34 including a main interconnection portion extending perpendicularly to an extending direction of the gate electrode 22 and being in contact with the gate electrode 22 and an extended portion provided at an end part of the main interconnection portion and extended horizontally with respect to the extending direction of the gate electrode 22.

Under 35 U.S.C. §103, in order for a claim to be obvious, each and every limitation of the claim must be set forth in the prior art. Applicants respectfully submit that none of the cited prior art references teach or suggest the above amendment. Hence, amended claims 1 and 6 and there dependent claims are not obvious within the meaning of 35 U.S.C. §103.

Maeno *et al.* neither teaches nor suggests the damascene interconnection and the interconnection having the main interconnection portion extended perpendicularly to the extending direction of the gate electrode and being in contact with the gate electrode. **Maeno *et***

al. discloses in, e.g., FIGs. 12 and 13 the multi-level interconnection structure including the lower-level interconnections 5, 6 and the upper-level interconnections 3, 4 which are connected to each other through the via contacts 1, 2. In **Maeno *et al.***, the metal wiring layer includes the main wires 3, 4, 5, 6 and the extensions 15, 16, 17, 18 provided at an end part of the main wires 3, 4, 5, 6 and extended perpendicularly to the main wires 3, 4, 5, 6. Thus, **Maeno *et al.*** is clearly different from the present invention.

Additionally, in **Maeno *et al.***, the extensions 15, 16, 17, 18 are provided at the end of the main wires 3, 4, 5, 6 in order to suppress the proximity effect upon the exposure for forming the metal interconnection which is formed by patterning the metal film.

In the present invention, the pattern of the interconnection groove is contrived in order to suppress the proximity effect upon the exposure for forming the interconnection groove. The proximity effect upon the exposure for forming the metal interconnection formed 'by patterning the metal film and that upon the exposure for forming the interconnection groove are different from each other in the deformation of the photoresist pattern and the degree thereof.' Thus, the technology described in **Maeno *et al.*** cannot be applied for suppressing the proximity effect upon the exposure for forming the interconnection groove as it is. **Maeno *et al.*** have nothing to do with the present invention.

Wu, Watanabe *et al.* and APA disclose the damascene interconnection. However, **Wu, Watanabe *et al.*** and APA also neither teach nor suggest the interconnection having the extension and the interconnection having the main interconnection portion extended

perpendicularly to the extending direction of the gate electrode and being in contact with the gate electrode.

The object of the present invention, as set forth in amended claims 1 and 6, is to prevent the defects of the contact between the damascene interconnection extended perpendicularly to the extending direction of the gate electrode and being in contact with the gate electrode and the contact hole opened onto the interconnection. For this purpose, in amended claims 1 and 6, the interconnection is comprised of the main interconnection portion extended perpendicularly to the extending direction of the gate electrode and the extended portion provided at the end part of the main interconnection portion and extended horizontally with respect to the extending direction of the gate electrode.

According to this feature, the interconnection groove for burying the interconnection can be formed while the shrinkage of the pattern end due to the proximity effect upon the exposure is effectively suppressed. The extended portion is extended horizontally with respect to the extending direction of the gate electrode, whereby the gate electrodes can be located without widening the pitch thereof (see FIGs. 1C and 2C). Thus, the proximity effect upon the exposure for forming the damascene interconnection extended perpendicularly to the extending direction of the gate electrode and being in contact with the gate electrode can be effectively suppressed without sacrificing the degree of integration. Neither, **Maeno *et al.***, **Wu**, **Watanabe *et al.*** nor APA teaches or suggests this motivation for the present invention.

Applicants respectfully submit that in light of the teachings of **Maeno *et al.***, **Wu**, **Watanabe *et al.*** and APA one of skill in the art would not derive the interconnection 34

including a main interconnection portion extending perpendicularly to an extending direction of the gate electrode 22 and being in contact with the gate electrode 22 and an portion provided at an end part of the main interconnection portion and extended horizontally with respect to the extending direction of the gate electrode 22 as required by amended claims 1 and 6. Thus, the present invention would not have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. §103, even though **Maeno *et al.***, **Wu**, **Watanabe *et al.*** and APA are combined. Wherefore, in light of the amendment to claims 1 and 6, and the remarks above, applicants respectfully request favorable reconsideration.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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Amendment under 37 C.F.R. §1.111
Amendment filed: January 17, 2006

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Michael J. Caridi", is written over the printed name.

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